

## WHAT IS CLAIMED IS:

## 1. A stepping motor comprising:

a rotor including a permanent magnet and magnetized in multipoles;

5 a plurality of coils arranged at a surrounding of the rotor and wound around a radius direction of the rotor;

a cylindrical supporter for supporting the plurality of coils including an insulating film having a flexibility; and

10 a casing for surrounding the permanent magnet, the plurality of coils and the supporter and fixed to the supporter.

2. The stepping motor according to claim 1, wherein  
15 the supporter includes a flexible board,

3. The stepping motor according to claim 2, wherein the flexible board includes a wiring pattern one end portion of which is electrically connected to the coil  
20 and includes a terminal portion at which other end portion of the wiring pattern aggregates.

4. The stepping motor according to claim 3, wherein the terminal portion is projected to outside of the casing.

5. The stepping motor according to claim 1 further comprising a cylindrical member constituted by winding a soft magnetic material in a strip-like shape a surface of which is insulatingly covered in a helical shape.

5

6. The stepping motor according to Claim 1, wherein the rotor includes:

the permanent magnet magnetized in a single pole in an axial line direction;

10 a plurality of magnetic pole teeth arranged at a surrounding of the permanent magnet and extended in an axial line direction of the permanent magnet; and

a pair of circular plate members respectively connected to end portions of the permanent magnet for  
15 supporting the magnetic pole teeth, and

wherein the magnetic pole teeth are alternately formed one of the circular plate members and other of the circular plate members.

20 7. The stepping motor according to claim 1, wherein a thickness of the insulating film falls in a range from 0.1mm to 0.2mm.

8. A method of manufacturing a stepping motor  
25 comprising the steps of:

providing a strip shape insulating film;  
fixing a plurality of coils to the insulating film;  
winding the insulating film into a cylindrical shape  
so as to dispose the fixed plurality of coils on an inner  
5 side of the insulating film;

after winding step, inserting the cylindrical shape  
insulating film into a cylindrical casing.

9. The method according to claim 8 further comprising  
10 the step of disposing a rotor including a permanent magnet  
so that the casing surrounds the permanent magnet and  
the plurality of coils.

10. The method according to claim 8, wherein in the  
15 winding step, one end of the insulating film is fixed  
to the other end of the insulating film so as to form  
the cylindrical shape.